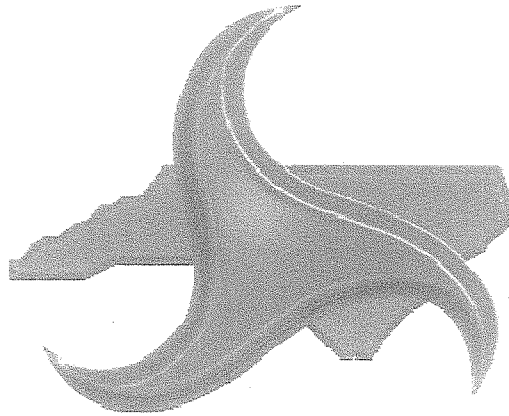


# High Hazard Elimination Request

US 70 from 1000' west of Willis Road to Banks Street  
Carteret County  
File # 02-08-207



Document Prepared By:

Eastern Region Mobility & Safety Field Operations  
Traffic Safety Unit  
Division of Mobility and Safety  
North Carolina Department of Transportation



Project Manager

P. Haywood Daughtry, III, PE, CPM  
P. Haywood Daughtry, III, PE, CPM  
Eastern Region Mobility & Safety Field Operations Engineer

10/30/08  
Date

6-4-76  
REV. 2-80

# HIGH ACCIDENT LOCATION - PROJECT REPORT

I. D. NO. \_\_\_\_\_  
PROJECT NO. \_\_\_\_\_

TITLE SHEET

PAGE 1

DIV. 2 COUNTY Carteret (IN/NEAR) CITY In Morehead City  
FED. AID SYS. FAP

LOCATION: US 70 from 1000 feet west of Willis Road to Banks Street (Length = 2.71 miles)

SAFETY PROGRAM PH NO. \_\_\_\_\_ YEAR \_\_\_\_\_ PRIORITY NO. \_\_\_\_\_

CORRESPONDENCE FILE NO. 02-08-207

BRIEF STATEMENT OF PROBLEM: The lack of any access control has resulted in numerous right angle crashes.

BRIEF STATEMENT OF PROPOSED TREATMENT: Construct a 18' raised median from 1000' west of Willis Road to Mansfield Parkway, and a 16' raised median from Mansfield Parkway to Banks Street.

WORK TO BE PERFORMED BY: STATE \_\_\_\_\_ CITY \_\_\_\_\_ STATE CONTRACT X  
OTHER CONTRACT \_\_\_\_\_

RECOMMENDED FUNDING HIGH HAZARD ELIMINATION

ESTIMATED COST \$1,926,000

## COMPREHENSIVE COST

BENEFIT-COST RATIO 4.08:1 NET ANNUAL BENEFIT \$606,775

MUNICIPAL AGREEMENT REQUIRED YES \_\_\_\_\_ NO X

RIGHT-OF-WAY REQUIRED YES \_\_\_\_\_ NO X

NUMBER OF PARCELS AFFECTED -0- NUMBER OF RELOCATEES -0-

INVESTIGATING PERSONNEL D. B. Morton, PLS DATE 10/30/08

AREA TRAFFIC ENGINEERS APPROVAL P. H. Daughtry, III, PE DATE 10/30/08

STATE TRAFFIC ENGINEERS APPROVAL \_\_\_\_\_ DATE \_\_\_\_\_

<u>SOURCE OF PROJECT</u>		<u>CHECK LIST</u>	
<u>      </u>	ANNUAL HIGH ACCIDENT LIST	<u>  X  </u>	TITLE SHEET
<u>      </u>	ROUTINE SURVEILLANCE	<u>      </u>	HISTORICAL SUMMARY
<u>      </u>	PUBLIC REQUEST	<u>      </u>	TURNING MOVEMENT COUNTS
<u>      </u>	HIGHWAY PATROL REQUEST	<u>  X  </u>	LOCATION MAP
<u>      </u>	DIV. OF HIGHWAYS REQUEST	<u>      </u>	PHOTOGRAPHS
<u>  X  </u>	MUNICIPAL REQUEST	<u>      </u>	COLLISION DIAGRAM
<u>      </u>	OTHER - GIVE DETAILS BELOW	<u>  X  </u>	ACCIDENT SUMMARIES
<u>      </u>		<u>      </u>	ACCIDENT REPORTS
<u>      </u>		<u>  X  </u>	ACCIDENT CAUSAL FACTORS
<u>      </u>		<u>      </u>	PROPOSED IMPROVEMENTS
<u>      </u>		<u>      </u>	ALTERNATE IMPROVEMENTS
<u>      </u>		<u>      </u>	INTERIM TREATMENT
<u>      </u>		<u>      </u>	CONDITION DIAGRAM
<u>      </u>		<u>      </u>	TREATMENT DIAGRAM
<u>      </u>		<u>  X  </u>	COST ESTIMATES
<u>      </u>		<u>  X  </u>	BENEFIT - COST ANALYSIS
<u>      </u>		<u>      </u>	TRAFFIC SIGNAL DATA
<u>      </u>		<u>      </u>	SKID TEST RESULTS
<u>      </u>		<u>      </u>	OTHER: _____

REVISIONS AND UPDATES

<u>CHANGE</u>	<u>DATE</u>	<u>INITIALS</u>
<u>      </u>	<u>      </u>	<u>      </u>
<u>      </u>	<u>      </u>	<u>      </u>
<u>      </u>	<u>      </u>	<u>      </u>
<u>      </u>	<u>      </u>	<u>      </u>

## CONDITION DATA AND ACCIDENT DATA

**CONDITION DATA:** CHECK IF SEPARATE SHEETS ARE ATTACHED FOR THE FOLLOWING

<u>          </u> CONDITION DIAGRAM		<u>          </u> TURNING MOVEMENT COUNTS
<u>          </u> HISTORICAL SUMMARY	<u>  X  </u>	<u>          </u> LOCATION MAP
<u>          </u> SIGNAL INVENTORY DATA	<u>          </u>	<u>          </u> PHOTOGRAPHS
<u>          </u> SUMMARY OF PROPOSED IMPROVEMENTS		

MAJOR ROAD 2005 ADT	<u>32,000</u>	MAJOR ROAD 2025 ADT	<u>57,800</u>
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### STATEMENT OF EXISTING PHYSICAL CONDITIONS:

US 70 is a six-lane shoulder section with back to back left turn lanes from 1000' west of Willis Road to NC 24. From NC 24 to Rochelle Drive is an eight-lane divided section with an narrow median. US 70 reverts to six-lanes with back-to-back left turn lanes from Rochelle Drive to Mansfield Parkway, then becomes a five-lane curb and gutter facility east of Mansfield Parkway through Banks Street. The speed limit is 45 MPH from the western limit of the proposed project to just east of Mansfield Parkway, where it becomes 35 MPH to the eastern limit of the proposed project. There are existing traffic signals at the intersections of US 70 with NC 24/Bridges Street, SR 1194 (Rochelle Drive), Mansfield Parkway, and SR 1605 (Friendly Road). There are numerous driveways and local streets intersecting US 70 along this 2.71 mile section without any control of access.

**ACCIDENT DATA:** CHECK IF SEPARATE SHEETS ARE ATTACHED FOR THE FOLLOWING

<u>          </u> COLLISION DIAGRAM	<u>  X  </u>	<u>          </u> ACCIDENT SUMMARIES
<u>          </u> ACCIDENT REPORTS	<u>          </u>	<u>          </u> SKID TESTS

TOTAL NUMBER OF ACCIDENTS	<u>225</u>	FROM	<u>1/1/2002</u>	TO	<u>12/31/2006</u>
NUMBER OF YEARS	<u>5</u>				

DESCRIBE DIFFERENT IDENTIFIED PATTERNS AND THE NUMBER OF ACCIDENTS IN EACH:

PATTERN NO.	PATTERN DESCRIPTION	NO. OF ACCIDENTS
1	Angle	71
2	Left Turn – Same Road	22
3	Left Turn – Different Roads	17
4	Rearend	183
5	Other	59
<b>TOTAL:</b>		<b>352</b>

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**CAUSAL FACTORS AND POSSIBLE TREATMENT**

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**CAUSAL FACTORS:** DESCRIBE CAUSAL FACTORS FOR EACH PATTERN AND LIST POSSIBLE TREATMENTS.

<u>PATTERN NO.</u>	<u>CAUSAL FACTORS AND POSSIBLE TREATMENTS</u>
1	Angle crashes occur at unsignalized street and driveway access points due to motorists choosing unacceptable gaps in mainline traffic while attempting to cross US 70. The construction of a raised median island will prevent motorists from being able to cross US 70 at most unsignalized locations.
2	Left turn – same road crashes occur when motorists on US 70 utilize unacceptable gaps as they attempt to turn left in front of approaching traffic. The construction of a raised median island will prevent motorists from being able to turn left on US 70 at most unsignalized locations.
3	Left turn – different road crashes occur at unsignalized street and driveway access points due to motorists choosing unacceptable gaps in mainline traffic while attempting to turn left onto US 70. The construction of a raised median island will prevent motorists from being able to turn left onto US 70 at most unsignalized locations.
4	Rear end crashes result from motorists slowing to enter the center two-way left turn lane being struck by trailing vehicles which failed to anticipate the need to reduce speed. The construction of a raised median island will prevent motorists from being able to turn left off of US 70 at most unsignalized locations.
5	Other crashes result for a variety of reasons and would generally not benefit from the construction of a raised median island.

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**PROPOSED IMPROVEMENTS**

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**PROPOSED IMPROVEMENT:** CHECK IF SEPARATE SHEETS ARE ATTACHED FOR THE FOLLOWING:

\_\_\_\_ ALTERNATIVE IMPROVEMENTS  
\_\_\_\_ SKETCHES

\_\_\_\_ INTERIM TREATMENTS  
\_\_\_\_ PLANS

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**DESCRIBE PROPOSED TOTAL IMPROVEMENT ALONG WITH ANY INTERIM TREATMENTS:**

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Construct a 18' raised median from 1000' west of Willis Road to Mansfield Parkway, and a 16' raised median from Mansfield Parkway to Banks Street.

USE ADDITIONAL SHEETS IF NECESSARY

# BENEFIT-COST ANALYSIS WORKSHEET

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LOCATION: US 70 Morehead City

BY: DBM

FILE NO.: 02-08-207

DATE: 10/10/2008 (revised 10-30-08)

DETAILED COST: TYPE IMPROVEMENT - Construct raised median & six directional crossovers without overlay

ITEMS	TOTAL	SERVICE	CRF	ANNUAL COST
Construction	\$1,926,000	20	0.102	\$196,167
TOTALS	\$1,926,000	20	0.102	\$196,167

ESTIMATED INCREASE IN ANNUAL MAINT. COST = \$800  
 ESTIMATED INCREASE IN ANNUAL UTILITY COST = \$0  
 TOTAL ANNUAL COST= \$196,967  
 TOTAL COST OF PROJECT= \$1,926,000

## COMPREHENSIVE COST REDUCTION:

### ESTIMATED NUMBER OF ANNUAL ACCIDENT DECREASES

PATTERN	%-	YEARS	K & A CRASHES	K & A CRASHES PER YR	B & C CRASHES	B & C CRASHES PER YR	PDO CRASHES	PDO CRASHES PER YR	TOTAL DECREASES	ANNUAL BENEFITS
Angle	90	5.00	0	0.00	22	3.96	49	8.82	12.78	\$220,536
LT -Same	90	5.00	0	0.00	12	2.16	10	1.80	3.96	\$105,840
LT -Different	90	5.00	0	0.00	5	0.90	12	2.16	3.06	\$50,868
Rear End	10	5.00	1	0.02	78	1.56	104	2.08	3.66	\$116,184
TOTALS			1	0.02	117	8.58	175	14.86	23.46	\$493,428

K&A INJURIES PER YEAR REDUCED \* \$1,800,000 = \$36,000  
 B&C INJURIES PER YEAR REDUCED \* \$45,000 = \$386,100  
 PDO'S PER YEAR REDUCED \* \$4,800 = \$71,328  
 TOTAL ANNUAL BENEFITS = \$493,428

AVERAGE ANNUAL BENEFITS X ADT FACTOR ANNUAL BENEFITS  
 \$493,428 X 1.629 = \$803,742  
 NET AVG. ANNUAL BENEFITS = AVG. ANNUAL BENEFITS - TOTAL ANNUAL COST = \$606,775  
 BENEFIT-COST RATIO = AVG ANNUAL BENEFITS/TOTAL ANNUAL COST = 4.08  
 PRELIMINARY ENGINEERING COST NEEDED IN ADDITION TO TOTAL COST = \$190,000

TOTAL COST OF PROJECT - \$1,926,000 COMPREHENSIVE B/C RATIO - 4.08

# BUGS



NC-DOT  
Project Services Unit  
Preliminary Estimate Section

October 3, 2008

Revised Copy

Memo To: David Morton, PLS  
Regional Traffic Safety Engineer

From: Doug Lane  
Preliminary Estimate Engineer

Subject: Preliminary Construction Estimate for Improvements to US 70, from Begin Paved Median  
just East of Belks to the Railroad (Crossed WB Lane) just West of Banks Street, in Morehead  
City, Carteret Count.

US 70

ESTIMATE	LOCATION	CONSTR.COST
#1	Beg Paved Med. To Railroad (Without Resurfacing)	\$1,800,000
#2	Beg Paved Med. To Railroad (With Resurfacing)	\$3,025,000

Note: Design Cost (PE) not included.

- \* Cost to Add Bio-Directional Cross-Over is \$21,000 Each for Alternate #1
- \* Cost to Add Bio-Directional Cross-Over is \$32,000 Each for Alternate #2
- Alternate #1 is Without Resurfacing
- Alternate #2 includes 1.5" Resurfacing

North Carolina Department of Transportation  
Preliminary Estimate

[Page]

TIP No. **Candidate Project**  
Route **US 70 in Morehead City without Resurfacing**  
From **Beg Paved Median (Belks) to Railroad just West of Banks St**  
Typical Section **Construct 18' Raised Median, Beg. To Mansfield St**  
**Construct 16' Raised Median, Mansfield St to Lockhart St.**

#1

County: **CARTERET**

<b>CONSTR.COST</b>
<b>\$1,800,000</b>

Prepared By: Doug Lane 10/03/08  
Requested By: David Morton, PLS 10/01/08

Line Item	Des	Sec No.	Description	Quantity	Unit	Price	Amount
			Borrow Excavation for Raised Median	12,871	CY	\$ 12.00	\$ 154,452.00
			Remove Existing Pavement	23,750	SY	\$ 5.00	\$ 118,750.00
			<b>Drainage</b>				
			MDS w / Grate and Frame	23	Each	\$ 3,000.00	\$ 69,000.00
			18" RC Pipe, Class III	364	LF	\$ 50.00	\$ 18,200.00
			Conv Ex 2-GI to MH w / Cover	9	Each	\$ 1,500.00	\$ 13,500.00
			Fine Grading		SY	\$ 4.00	\$ -
			<b>Paving</b>				
			4.0" B 25.0 B		Tons	\$ 80.00	\$ -
			3.0" I 19.0 B		Tons	\$ 80.00	\$ -
			3.0" S 9.5 B		Tons	\$ 80.00	\$ -
			1.5" S 9.5 B (Resurfacing)		Tons	\$ 40.00	\$ -
			PG 64-22		Tons	\$ 380.00	\$ -
			1'-6" Concrete Curb and Gutter	25,092	LF	\$ 13.00	\$ 326,196.00
			7" Concrete Monolithic Island	445	SY	\$ 60.00	\$ 26,700.00
			Erosion Control	5.10	Acre	\$ 15,000.00	\$ 76,500.00
			Landscape Planting (Raised Median)	2.71	Miles	\$ 30,000.00	\$ 81,300.00
			Signing		LS		\$ -
			Traffic Control	2.71	Miles	\$ 100,000.00	\$ 271,000.00
			Thermo and Markers		Miles		\$ -
			<b>Utility Construction</b>				
			Relocate Existing Water Lines		LF	\$ 50.00	\$ -
			Misc. & Mob (10% Util)	1	LS		
			Misc. & Mob (35% Roadway)	1	LS		\$ 404,402.00

Lgth 2.71 Miles

Contract Cost .....	\$ 1,560,000.00
E. & C. 15% .....	\$ 240,000.00
Construction Cost .....	\$ 1,800,000.00